PROJECT-BASED LEARNING IN MIDDLE SCHOOL CLASSROOMS IN SOUTHEASTERN, UNITED STATES

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ABSTRACT

Teachers at a middle school in a Southeastern U.S. state were not implementing project-based learning (PBL) as mandated by the district. The purpose of this qualitative case study was to examine the perspectives of teachers concerning PBL implementation and how their self-efficacy shaped their perspectives. Bandura's self-efficacy theory provided the framework for the study. Data were collected through interviews with 11 participants and examination of PBL artifacts.

Data were analyzed using thematic, open and axial coding to discover patterns and themes. Findings indicated that teachers shaped their perspectives regarding PBL through their experiences while implementing PBL, collaboration among teachers is imperative when implementing new strategies such as PBL, and training before and during implementation is essential. Self-efficacy had a positive effect on PBL implementation. A recommendation was given to provide time for collaboration and to implement a professional development program developed for this project study. Findings may be used to increase teacher self-efficacy by offering appropriate resources to improve future PBL implementation.

KEYWORDS: Problem-based learning, self-efficacy, professional development, middle school education, teacher education, education.

INTRODUCTION:

The current educational environment requires a new skill set for teachers to be effective in the classroom as learning is centered on changes to match the way the world communicates and collaborates in the 21st century. The new skill set will make classrooms student centered with the inclusion of strategies such as PBL[1]. Teachers at a middle school in a Southeastern U.S. state are not implementing PBL as mandated by the district.

Teachers can no longer rely on disseminating information to students and using grades as the primary indicator of mastery[2]. For 21st-century education, teachers are expected to provide lessons that will help students create, communicate, collaborate, research, think critically, solve problems, make decisions, and use technology and information efficiently[3]. Teachers must possess the appropriate skills and resources to assist their students. It is important that they become facilitators within the classroom to help students take responsibility for their learning[4].

PBL is an application that requires teachers to be facilitators, guiding students in an interdisciplinary study[5]. A student-designed product or presentation is the goal of PBL, but the process is as important as the outcome. The problems students work to solve are real world and open ended. The problems are authentic and require an authentic product[5]. PBL is a collaborative process, and students must research on their own with guidance by the teacher so that they can find a solution to the problem[6].

Research showed that PBL has a positive effect on student performance[7]. PBL enhances the ability of students to solve problems and create authentic products that often change the way students think. Students design research and products on their own, which strengthens their self-efficacy[8]. Using real-world problems is a way to engage students in the process by giving them choice and allowing them to make decisions about how their learning will take place. The practice of problem solving can influence students' critical thinking. Student knowledge is expanded because they explore concepts beyond what is required by states and districts[9].

The administrators and staff of Foster Middle School (FMS, pseudonym) in a suburban area are determined to provide student-centered learning using PBL because it is a district mandate (FMS Principal, personal communication, November 15, 2015). FMS is in PolkCounty. Data from walkthroughs (brief classroom observations), surveys, and data chats showed that PBL strategies presented briefly at the district level were poorly implemented into classrooms as teacher training continues (FMS Assistant Principal, personal communication, October 13, 2015). In response, the district required teachers to focus on eight essential product design elements of PBL implementation[10]. With input from the data collection tools, the administrators at FMS embraced the district training tools and began the process of full implementation during the 2015 school year[11].

FMS researched best practices and evidence-based strategies to determine the direction instruction would take in the coming years. The district determined that PBL would be an effective means of improving student learning and created a pro-cess for implementation. This qualitative study addressed teacher perspectives on the process of implementing PBL.

It is important for teachers to implement PBL into classrooms because it is a district mandate. The district mandated the implementation of PBL to educate students with research- based strategies to become productive citizens. The focus of this study was to explore the perspectives of teachers and their self-efficacy as they implement PBL. The standard for effective implementation has been those set forth by the district. There are eight elements that teachers are expected to include in their PBL lessons:"challenging problem or question, sustained inquiry, authenticity, student voice and choice, reflection, critique and revision, and public product"[10]. These elements are used by the BIE to train teachers to design appropriate PBL projects. and training provided by the school and the district. Using self-efficacy theory as the theoretical framework for this study, data was collected through interviews and examination of documents from teachers in Grades 6-8. Self-efficacy supports the idea that teachers must believe they can perform a task to be successful. Teachers' level of self-efficacy may determine whether they are able to complete the task of implementing PBL in their classroom instruction[12]. In this study, faculty perspectives were explored on the level of comfort they have with the strategies provided to implement PBL in the classroom. The data collected were used to answer the following research questions:

1. How well do teachers believe they were able to implement PBL?

2. How well do teachers feel supported to implement PBL?

MATERIALS AND METHODS:

Using a qualitative case study, the perspectives of faculty members were explored as they implemented PBL strategies in their classrooms. A deeper understanding of the perspectives of faculty concerning their ability to implement PBL strategies was explored. The data collected consisted of interviews and artifacts. The artifacts included: teacher BIE checklists and student products from the PBL experience. The purpose of this study was to determine how well teachers at FMS are implementing PBL. FMS administrators have issued a mandate for all classroom teachers to implement PBL in their classrooms (FMS Principal, personal communication, November 15, 2015). A qualitative case study was conducted to determine the effectiveness of the PBL implementation[13]. Teachers had the opportunity to describe their personal experiences and perspectives to give credibility to the outcome of this study.

How teachers at FMS were implementing PBL in Grade 6-8 classrooms was explored. A case study was used to guide the methodology of this study and provide a description of a bounded system. Case studies are used to explore meaning and insight into a situation, which in this case was the implementation of PBL under a district mandate. A case study was appropriate to explore teachers' unique experiences so that a deep understanding of how teachers view the process of implementing PBL could be obtained[14]. Case studies are used to answer *how* and *why* questions in a detailed manner[15].

RESULTS:

During this study, the interview responses, examination of student products, and checklists provided the findings based on the problem, and research questions. When the district mandated that teachers implement PBL in their classrooms, many teachers were not successful according to data collected at the school level. Teachers were able to share their perspectives concerning the implementation of PBL during interviews, and the student work samples provided validity to teacher responses.

All participants felt it difficult to implement PBL at the onset because they did not understand what PBL was and how it would look in the classroom. To these participants, district expectations were unclear, and they felt uneasy about moving ahead without complete understanding. Participants also lacked self-efficacy because they were not able to meet expectations. Participants that were trained discussed the essential elements of PBL from the BIE website and book. They felt that they missed some of them and were concerned about the incomplete status of their projects.

Two factors were noteworthy during the analysis of the data. First, nine participants were confused about how PBL fit into the curriculum. They believed that students did not have enough background knowledge to complete extensive and rigorous projects during a unit. There was a disconnect between district expectations and teacher understanding because many teachers lacked training while attempting to implement PBL.

The district expected the PBL project to be a tool that can be used during a unit alongside all other forms of instruction that might be used according to BIE training. The project was intended to aid in the learning process. True to prior practices, the participants had been trying to fit the project in as they would an end-of-unit project. However, if teachers are using PBL in the same way they use an end-of-unit project, many of the BIE elements will be missing.

The second factor that stood out during the analysis of data was that four participants were not sure how to go about creating projects. They found projects online that could be modified for their needs. They also took existing projects from their collection and adjusted it to be a PBL project. Still, others started from scratch. Participants were never sure whether their method was correct because they felt that it was difficult to incorporate all eight elements of PBL according to the BIE. Without a clear understanding of what was expected, there was much angst among participants concerning implementation.

Data were collected and manually coded for this study in three stages: thematic, open, and axial coding. The following research questions were explored based on the analysis of the data. The first research question asked: *How well were teachers able to implement PBL?*

Data from interviews, checklists, and student work samples showed that teachers who were trained at the beginning of PBL implementation process had a greater understanding of what district expectations were and how BIE elements of PBL would fit into classroom implementation. Participants also revealed that trial and error helped them revise their projects and make them more effective over time.

The second research question asked: *How well did teachers feel supported as they implemented PBL?* Data showed that participants were comfortable attempting PBL even if they were not trained to adhere to the district requirements. Participants commented that technology and collaboration among teachers supported the implementation of PBL. They also stated that a lack of training and unclear district expectations impeded the implementation process.

Participants were engaged in the process of implementation because of the district mandate and because they saw that PBL was a research-based strategy. They found that it would be difficult to implement PBL without technology. Participants found it easier to work with curriculum team members than interdisciplinary team members because a group who taught the same subject was able to focus on standards as they created a project.

It was difficult for participants to understand the difference between an end-of-unit project and PBL. This, coupled with confusion about district expectations, created failures in the implementation of effective PBL. After analyzing student work samples, project checklists, and participant reported self-efficacy, two participants reported higher self-efficacy even though their projects and student work samples did not meet district expectations according to the checklists.

The conceptual framework that guides this study is self-efficacy. The major tenant of this framework is that a person will have low self-efficacy (feeling able to complete a task) when they are not equipped. This framework supports the findings of this study because participants reported that it was difficult to complete the task of PBL implementation without appropriate training and understanding of expectations.

DISCUSSION:

The findings of this study showed that a major barrier to the implementation of PBL stemmed from the uncertainty of participants about what PBL is and how it would look in the classroom. There were three groups of participants: those who had been trained by the district early in the process, those who were trained later in the process, and those who were yet to be trained. Each participant who was already trained articulated a need for more structured training so that they could understand what they were implementing and how to surmise success or failure. Those who had not been trained at the time of this study described the need for training to help them transition from implementing what they think is PBL to meeting district expectations. The district-wide training was a principal topic for most of the interviews.

Findings in the literature speak to the increased need for informative training that can be used to implement new strategies in the classroom. It is important that educators have a clear understanding of expectations, ways to implement, and how to track the success of the implementation process[8]. Effective PD gives teachers the necessary information and encouragement to get the job done[10]. Training that never ties content and methodology together makes it difficult for teachers to go back into the classroom with a clear picture of what to do and how to do it[16].

The earlier the training occurs for participants, the more self-efficacy participants reported[17]. Those trained early in the process felt that their implementation efforts were successful even though they desired more guidance. They were able to employ trial and error to correct mistakes and improve projects over time. Participant 1 felt confident enough to create subsequent projects without the aid of checklists and planning guides. One participant used pitfalls that occurred early to create projects she believed to be successful. The participants who were trained early still wanted opportunities to communicate with an expert that could give them feedback on their projects and increase their success. Another participant stated that expert feedback would have accelerated her success. Three participants were not trained until the process was further along and felt that they needed more training because of the lack of experience. Participant 6 felt that there needed to be a "next level training" to alleviate some of the uncertainty she had about the implementation process. These teachers reported a lack of experience and the trial and error process that hindered their confidence in their projects.

There were also participants who had yet to be trained at the time of their interview. These participants were still using the initial expectations for PBL and had no idea that the expectations had changed unless they had team members who were already trained. If no one on the team had training, they had no real knowledge of the expectations of PBL projects because the book and online resources were shared during training. Participant 9 said that he "picked up bits and pieces from teammates" who were trained. Participants who were not trained at the time of this study were confused about the process of PBL and how it differed from several other initiatives that were introduced earlier than PBL. During the interview process, 4 were unaware that there were eight essential elements necessary for PBL implementation. Participant 4 was not aware that a successful project included eight elements, not four.

CONCLUSIONS:

The purpose of this research study is to assist teachers in the appropriate implementation of PBL projects. The results of the study indicated that teachers require more in-depth training to implement PBL. Teachers reported that they did not leave the training with the full understanding of PBL and were not sure that their projects were Gold Standard PBL.

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